SEQUENCE LISTING

<110> MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH

<120> CANINE DISTEMPER VIRUS HEMAGGLUTININ AND FUSION POLYPEPTIDES

<130> 07039-1936WO1

<140> PCT/US2020/055100
<141> 2020-10-09

<150> 62/913,111
<151> 2019-10-09

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<170> PatentIn version 3.5

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Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
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Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
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Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
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Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Phe Ser Ala Leu Ser
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Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
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Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
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Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
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Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
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Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
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Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
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Tyr His Asp Ser Asn Asp Ser Gln Asp Gly Ile Leu Val Val Thr Leu
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Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
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Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
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Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Thr Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
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Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
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Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
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Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
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485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
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Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Ser Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
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Gly Pro Arg Thr Leu Asp Arg Leu Val Cys Tyr Ile Met Asn Arg Ala
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Pro Glu Ser Val Ser Gln
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Gly Ala Arg Ser Gln Leu Lys Arg Arg Thr Ser Asn Ala Ile Asn Ser
100 105 110

Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
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Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu

180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
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Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Ile Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Thr Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
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Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
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Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Ile Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Ala Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
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Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
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Ser Tyr Val Arg Ser Leu
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35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Ser Ile Gly Ile Arg
145 150 155 160

Lys Ala Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro His Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Trp Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Val Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Leu Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Trp Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Ile Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Ser Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
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Gln Phe Tyr Arg Phe Glu Ala Asp Ile Ala Asn Ser Thr Thr Ser Val
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35 40 45

Gly Pro Arg Thr Leu Asp Arg Leu Val Cys Tyr Ile Met Asn Arg Ala
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Pro Glu Ser Val Ser Gln
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Gly Ala Arg Ser Gln Leu Lys Arg Arg Thr Ser Asn Ala Ile Asn Ser
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Leu Phe Leu Cys Ser Lys Ala
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<212> PRT
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35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asp Arg Ile
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Ile Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

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Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
        195                 200                 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
    210                 215                 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225                 230                 235                 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
                245                 250                 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
            260                 265                 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
        275                 280                 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
    290                 295                 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
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Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
                325                 330                 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
            340                 345                 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
        355                 360                 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
    370                 375                 380
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Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
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Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
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Ser Tyr Val Arg Ser Leu
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Ile Pro Ala His Gly Asp His Glu Gly Val Val His His Thr Pro Glu
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Ser Val Ser Gln Gly Ala Arg Ser Gln Leu Lys Arg Arg Thr Ser Asn
35 40 45

Ala Ile Asn Ser Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile
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Gly Ile Ala Ser Leu Phe Leu Cys Ser Lys Ala
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<213> Artificial Sequence

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polypeptide

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Leu Trp Cys Ile Gly Ile Ala Ser Leu Phe Leu Cys Ser Lys Ala
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peptide

<400> 14
Met Ala Thr Ser Pro Gly Pro Gln Cys Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Ile Ala Ser Leu Phe Leu Cys Ser Glu Ala
20 25

<210> 15

<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 15
Met Ala Val Lys Ser Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Val Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 16
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 16
Met Ala Ser Asn Pro Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Ile Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 17
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 17
Met Ala Thr Asn Ala Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Ile Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 18
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 18
Met Ala Thr Ser Ser Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Val Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 19
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 19
Met Ala Ile Asn Ser Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Val Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 20
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 20
Met Ala Ile Asn Ser Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys
1 5 10 15

Ile Gly Ile Ala Ser Leu Phe Leu Cys Ser Lys Ala
20 25

<210> 21
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
6xHis tag

<400> 21
His His His His His His
1 5

<210> 22
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 22
agaaaactta gggctcaggt agtcc 25

<210> 23
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 23
tcgtctgtaa gggatttctc acc 23

<210> 24
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 24
aggacatagc aagccaacag g 21

<210> 25
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 25
ggactacctg agccctaagt tttct 25

<210> 26
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 26
ccggtagtta attaaaactt agggtgcaag atcatcgata atgctctcct accaagataa 60

ggtg 64

<210> 27
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 27
ctatttcaca ctagtgggta tgcctgatgt ctgggtgaca tcatgtgatt ggttcactag 60

cagcctcaag gttttgaacg gttacaggag 90

<210> 28
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 28
Asp Tyr Lys Asp Asp Asp Asp
1 5

<210> 29
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 29
Gly Ser Ser Gly Gly Ser Ser Ser Gly
1 5

<210> 30
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 30
Ser Ser Gly Gly Gly Gly Ser
1 5

<210> 31
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 31
Met Leu Ser Tyr Gln Asp Lys Ala Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Thr Lys Leu Ser Leu Val Thr Glu Glu His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Val Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Ser Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Ser Ile Gly Ile Arg
145 150 155 160

Lys Ala Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Pro
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro His Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Ala Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Ser Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Thr Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Pro Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Met Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Ser Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Asn Pro
595 600 605

<210> 32
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 32
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Pro Ser Lys Leu Ser Leu Val Thr Glu Glu His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ser Ile Thr Gly Val Arg Phe His Lys Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Val Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Arg Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Val Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Gly Gly Asn Cys Tyr Leu Pro Ile Gln Thr

485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Phe Arg Thr
530 535 540

Ile Phe Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Tyr Glu Ala Asn Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Asn Pro
595 600 605

<210> 33
<211> 604
<212> PRT
<213> Canine morbillivirus

<400> 33
Met Leu Pro Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Thr Lys Leu Ser Leu Val Thr Glu Gly His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Ile Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Ser Ile Gly Ile Arg
145 150 155 160

Lys Ala Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro His Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly

275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Trp Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Phe Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Leu Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Ile Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Ser Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg
595 600

<210> 34
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 34
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Pro Ser Lys Leu Ser Leu Val Thr Glu Glu His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ser Ile Thr Gly Val Arg Phe His Lys Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys

65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Ser Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Val Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Arg Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Val Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Gly Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Phe Arg Thr
530 535 540

Ile Phe Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Tyr Glu Ala Asn Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Asn Pro
595 600 605

<210> 35
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 35
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Pro Val Thr Glu Glu His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Arg Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Thr Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Arg Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Arg Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro Gln Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Cys Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Val Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Tyr Glu Ala Asn Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Asn Pro
595 600 605

<210> 36
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 36
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Pro Ser Lys Leu Ser Leu Val Thr Glu Glu His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ser Ile Thr Gly Val Arg Phe His Lys Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Ser Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Val Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Asp Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Arg Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Met Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Val Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Gly Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Ile Asp Arg Asp Val Leu Ile Glu Ser Asn Leu Val Val

500 505 510

Leu Pro Thr Gln Ser Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Phe Arg Thr
530 535 540

Ile Phe Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Tyr Glu Ala Asn Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Asn Pro
595 600 605

<210> 37
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 37
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val His Asp Tyr Ile Glu
225 230 235 240

Gly Gly Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu

290 295 300

Tyr His Asp Ser Asp Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Ala Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Ser Thr Val Ile Pro His Val Phe Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ala
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 38
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 38
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Asp Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe

85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Ser Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Gly Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Trp Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Ile Ile Pro His Val Trp Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Ile
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 39
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 39
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Ser Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Tyr Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Ile Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Met Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Met Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

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Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305                 310                 315                 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
                325                 330                 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
            340                 345                 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
        355                 360                 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
    370                 375                 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385                 390                 395                 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Ala Pro Ser
                405                 410                 415

Ile Asp Leu Arg Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
            420                 425                 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
        435                 440                 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
    450                 455                 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465                 470                 475                 480

Phe Ala Pro Arg Glu Ser Ser Glu Asn Cys Tyr Leu Pro Ile Gln Thr
                485                 490                 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
            500                 505                 510
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Leu Pro Thr Gln Asn Phe Arg Tyr Val Thr Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Gln Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Ser Arg Ser Lys Pro
595 600 605

<210> 40
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 40
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Pro Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Val Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Ile Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Ser Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Gly Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser

515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys His Arg Ser Lys Pro
595 600 605

<210> 41
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 41
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala His Thr
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Ile Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu

305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Ser Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Gly Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Ser Arg Ser Lys Pro
595 600 605

<210> 42
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 42
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Asp Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn

100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Ser Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Ser Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Leu Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Pro His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Ala Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 43
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 43
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Arg
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Arg Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Val Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Leu Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Val Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Arg
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Thr
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Ile Ser Val
580 585 590

Glu Thr Leu Asp Pro Ile Arg Ser Ser Cys Lys Arg Ser Gly Pro
595 600 605

<210> 44
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 44
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Val Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr

530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Ser Arg Ser Arg Pro
595 600 605

<210> 45
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 45
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Thr Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Thr Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro

325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Arg Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ala Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Arg Pro
595 600 605

<210> 46
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 46
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Tyr Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Thr Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn

115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Thr Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Lys Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Met Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ala Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Arg Pro
595 600 605

<210> 47
<211> 601
<212> PRT
<213> Canine morbillivirus

<400> 47
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Ile Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser
595 600

<210> 48
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 48
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Thr Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Thr Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Lys Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Ala Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Thr Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Ile Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp

545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ala Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Arg Pro
595 600 605

<210> 49
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 49
Met Leu Ser Tyr Arg Asp Lys Val Asp Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Leu Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Thr
180 185 190

Ile Ser Val Gly Lys Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Met Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala Asp Pro Leu Val Glu Lys Ile His Ile Thr Asn His Arg Gly

340 345 350

Ile Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Ile Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Ser Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Met Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 50
<211> 80
<212> PRT
<213> Canine morbillivirus

<400> 50
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Asp Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

<210> 51
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 51
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Asp Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Ser Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Ser Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Leu Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Pro His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn

450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Ala Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 52
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 52
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Lys Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Val Phe Pro Ser Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Leu Glu
225 230 235 240

Gly Glu Phe Asp Met Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile

245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asp Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Ala Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Met Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 53
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 53
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly

35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Val Phe Pro Ser Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Leu Glu
225 230 235 240

Gly Glu Phe Asp Met Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asp Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Ala Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Met Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 54
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 54
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Val Phe Pro Ser Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Leu Glu
225 230 235 240

Gly Glu Phe Asp Met Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asp Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Ala Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Arg Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Met Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 55
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 55
Met Leu Ser Tyr Gln Asp Lys Val Ser Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Gly Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asp Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr

465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ala
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ser Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 56
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 56
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Asp Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Ser Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met

260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Gly Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Trp Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Ile Ile Pro His Val Trp Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ser Thr Asn Ser Thr Thr Ser Ile
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 57
<211> 607
<212> PRT
<213> Canine morbillivirus

<220>
<221> MOD_RES
<222> (295)..(295)
<223> Any amino acid

<400> 57
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1 5 10 15

Arg Ala Asn Leu Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Asn Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Ile Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Thr Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Xaa Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Asp Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Thr Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Met Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn

450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Ser Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 58
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 58
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Leu Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile

245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Ala Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Gly Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 59
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 59
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Leu Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly

35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Ile Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Asp Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Thr Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Met Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Ser Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Ser Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Lys Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro His Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Ile Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Lys Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Val Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Glu Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Ile Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser

465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Asn Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met

260 265 270

Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Glu Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Ile Asp Arg Gln Ile Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Arg Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
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Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser

50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Glu Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Val Thr
180 185 190

Thr Ser Val Gly Glu Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Val Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
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Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Gly Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Lys Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Ile Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Phe Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Ser Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ser Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Thr Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Asp Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Thr Asp Arg Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asn Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
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Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Ser
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Ser Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Leu Thr Asn Tyr Cys Asp Thr Ile Gly Leu Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Phe Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr

485 490 495

Phe Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Phe Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Phe Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Leu Thr Asn Tyr Cys Asp Thr Ile Gly Leu Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Phe Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly

275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Phe Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Lys Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Lys
530 535 540

Ile Ser Phe Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asp Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 67
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 67
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys

65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Leu Thr Asn Tyr Cys Asp Thr Ile Gly Leu Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Phe Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Leu Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Asn Leu Glu Glu Gln Glu Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Phe Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Lys
530 535 540

Ile Ser Phe Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Phe Pro Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 68
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 68
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Leu Thr Asn Tyr Cys Asp Thr Ile Gly Leu Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Phe Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Phe Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Lys
530 535 540

Ile Ser Phe Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Phe Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 69
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 69
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Ser Val Thr Glu Glu Gln Gly Gly
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Ser Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Pro Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Gly
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Arg Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Arg Asp Val Leu Thr Glu Ser Asn Leu Val Val

500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Asn Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 70
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 70
Met Leu Ser Tyr His Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Phe Leu Leu Phe Val Leu Leu Val Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Ser
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Ala
180 185 190

Thr Ser Ala Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asp Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu

290 295 300

Tyr His Asp Ser Asp Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ile Ser
355 360 365

Gly Glu Gln Glu Glu Gln Lys Asn Cys Leu Glu Leu Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Asp
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Phe Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Gly Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Gly Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys His
595 600 605

<210> 71
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 71
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Phe Leu Leu Phe Val Leu Leu Val Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe

85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Ile Ile Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ile Ser
355 360 365

Gly Glu Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Gly
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Arg Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Ile Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 72
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 72
Met Leu Ser Tyr Gln Asp Lys Val Ser Ala Phe Tyr Lys Asp Asn Ala
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Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Ala Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Lys
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Asn Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Gly
405 410 415

Ile Asp Leu Gln Leu Asn Leu Ser Phe Thr Tyr Gly Pro Ile Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Tyr Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 73
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 73
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Ser Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Ala
180 185 190

Thr Ser Ile Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Asp Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Glu Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Ser Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Trp Gly Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Lys Ala Ile Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Met Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Gly Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ala Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser

515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 74
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 74
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu His Gly Ser
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Ala Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Lys
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Arg Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu

305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Asn Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Gly
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Ile Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Tyr Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<213> Canine morbillivirus

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20 25 30

Arg Arg Pro Pro Phe Leu Leu Phe Val Leu Leu Val Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Asp Ala Val His Tyr Gln Val Arg Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn

100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Ala
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Ile Ile Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ile Ser
355 360 365

Gly Glu Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Gly
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Arg Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Ile Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 76
<211> 607
<212> PRT
<213> Canine morbillivirus

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Gln Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Thr Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Arg Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
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Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
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<210> 77
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<212> PRT
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Thr Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Arg Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr

530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Gly Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Pro Gln Gly Gly Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Met Ile Pro

325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Glu
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Ile Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<213> Canine morbillivirus

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35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn

115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Gly Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Met Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Val Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Leu Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Glu
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Thr Asn Ser Thr Ile Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Arg Arg Pro Leu Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His His Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Ser Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Lys Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Val Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Asp Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asn Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Met Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Pro Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Ile Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Lys Phe Ser Cys Asp Arg Ser Lys Pro
595 600 605

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35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Gly Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Phe Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Gly Gly Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Met Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Val Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Glu

545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Ile Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 82
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 82
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Thr Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly

340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Arg Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 83
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 83
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser

130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Val Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Met Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Ser Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

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Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Phe
        355                 360                 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
    370                 375                 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385                 390                 395                 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
                405                 410                 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
            420                 425                 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Thr Leu Ser Asp Ser Gly
        435                 440                 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
    450                 455                 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465                 470                 475                 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
                485                 490                 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
            500                 505                 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
        515                 520                 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
    530                 535                 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545                 550                 555                 560
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Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 84
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 84
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Glu Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Phe Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Phe Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Ser Leu
290 295 300

Tyr His Asp Gly Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Trp Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Val Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Val
545 550 555 560

Ser Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 85
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 85
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Ile Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Val Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Asn
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ser Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His

565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 86
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 86
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Val Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Ile Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Val Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser

355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Asn
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ser Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 87
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 87
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg

145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Glu Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Ala Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Ala Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Thr Phe Gly Arg
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Asn Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 88
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 88
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Val Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Met Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Ser Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Phe
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Thr Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 89
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 89
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Val Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Thr Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Ile Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Val Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Asn
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Gly Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ser Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Gln Phe Glu Ala Asp Ile Ala Asn Ser Thr Thr Gly Val

580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<212> PRT
<213> Canine morbillivirus

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Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Arg Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Val His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg

370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Ser Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Ser Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Thr Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ser
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Lys Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 91
<211> 607
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<213> Canine morbillivirus

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Arg Ala Asn Ser Ser Arg Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
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Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser

165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Arg Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Val His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Glu Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Ser Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Thr Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ser
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Lys Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
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35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Arg Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Val His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Lys Pro Phe Gly Gly
385 390 395 400

Glu Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Ser Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Thr Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ser
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Lys Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<213> Canine morbillivirus

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Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Arg Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Glu Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Ser Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro

595 600 605

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35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Val Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Gly Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly

385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Arg Pro Pro Tyr Leu Leu Phe Ile Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr

180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Ala Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Ser Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Arg Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Val His Ile Thr Asn His Arg Gly
340 345 350

Leu Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Ser Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Arg Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Thr Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ser
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Lys Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 96
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Ile
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<213> Canine morbillivirus

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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 98

<211> 607
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<213> Canine morbillivirus

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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Ile
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Gly Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser

405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 99
<211> 607

<212> PRT
<213> Canine morbillivirus

<400> 99
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Ile
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Arg Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser

195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Arg Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 100
<211> 607
<212> PRT

<213> Canine morbillivirus

<400> 100

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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Ile
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Asn Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ser Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<211> 607
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<213> Canine morbillivirus

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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Phe Leu Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Met Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Asp Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ser Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Thr Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Arg Pro
595 600 605

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<213> Canine morbillivirus

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Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Leu Ala Ala Lys Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Lys Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Ile Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Val Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Gly Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu

420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Lys Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 103
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<212> PRT
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<400> 103

Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Ile
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Val Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Lys Phe Phe Asn Pro Ser
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Val Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Ser Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Lys Pro Ile Leu Ser Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Ile Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser

210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Gln Glu Glu Gln Lys Ile Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Phe Leu Asp Pro Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Ser Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Val Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Ser Phe Ile Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Ile Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Thr Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 104
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 104
Met Leu Ser His Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala

1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Met Thr Glu Glu Arg Gly Asp
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Asp Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Ile Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Lys Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Gly Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Ala
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 105
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 105
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Val Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Arg Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Ala Leu Pro Ile Asp Pro Ser
405 410 415

Ile His Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 106
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 106
Met Leu Ser His Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Met Thr Glu Glu Arg Gly Asp
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Asp Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Lys Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Ile Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly

435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 107
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 107
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu

225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Ile Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 108
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 108
Met Leu Ser His Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Met Thr Glu Glu Arg Gly Asp

20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu Tyr Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Ala Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Ile Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr His Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Ile Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 109
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 109
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Ile Asp Pro Ser
405 410 415

Ile His Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<212> PRT
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ala Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Ile Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Ser His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Val Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Arg Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Arg Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Ala Leu Pro Ile Asp Pro Ser
405 410 415

Ile His Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Asp Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn

450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Cys Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 111
<211> 607
<212> PRT
<213> Canine morbillivirus

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Arg Ala Asn Ser Pro Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile

245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Trp Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Val Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Ser Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Gly Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 112
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 112
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly

35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Val Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Leu Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Val Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Gly Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 113
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 113
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Phe Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Val Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Val Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Arg Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Tyr Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Phe Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 114
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 114
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Asn Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Gly
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Val Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys His Ile
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr

465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Asp Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 115
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 115
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Ser Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met

260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Ser
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Val Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Glu Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp His Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 116
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 116
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser

50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Met Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Gly Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Ser Met Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Gly Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Val Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Gly Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Ala Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 117
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 117
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Ser Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Ile Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Val Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Cys Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Val Asn Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Glu Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Ser Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Asn Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 118
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 118
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Thr Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Ser Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Ile Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Thr Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asn Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Ile Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Val Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Gly Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Glu Ser Gly
435 440 445

Trp Leu Thr Val Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro Tyr Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr

485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Asn Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asn Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 119
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 119
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Val Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly

275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Glu Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Glu Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Ser Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 120
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 120
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys

65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Lys Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Glu Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 121
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 121
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Val Gly Val Lys
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Ile Leu Ser Ala Leu Ser
165 170 175

Gly Ala Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Ser Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Glu Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Pro His Asp Ser Val Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu His Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Gly Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 122
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 122
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val

500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 123
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 123
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu

290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Lys Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Met Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 124
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 124
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe

85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Gly Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Glu Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<211> 607
<212> PRT
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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Glu Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<211> 607
<212> PRT
<213> Canine morbillivirus

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20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Gln Gln Lys Leu Asn
100 105 110

Gly Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Ser Glu Phe Asp Phe Arg Asn Phe His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ile Leu Phe
165 170 175

Gly Cys Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ile
180 185 190

Thr Ser Val Gly Arg Val Ile Pro Leu Ser Val Ser Leu Ser Thr Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Leu Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Lys Glu Phe Asp Thr Arg Glu Ile Arg Val Phe Glu Ile Lys Phe Ile
245 250 255

Glu Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Ile Thr Asn Tyr Met
260 265 270

Ile Leu Gly Glu Asn Ser Glu Ala Lys Val Cys Thr Ile Ala Val Asp
275 280 285

Gln Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr Tyr Asp Ser Asn Gly Ser Arg Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Glu Ala Ser Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala Asn Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Tyr Ile Ile Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Leu Glu Gly Gln Glu Asn Cys Leu Glu Ser Ala Cys Arg Arg
370 375 380

Glu Ser Tyr Pro Met Cys Lys Gln Thr Ser Cys Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Val Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Glu Arg
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Arg
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Glu Asp Gln Phe Thr Val Thr Ser His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Phe Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser

515 520 525

Arg Arg Tyr His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
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595 600 605

<210> 127
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<212> PRT
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35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Gln Gln Lys Leu Tyr
100 105 110

Gly Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Ser Glu Phe Asp Phe Arg Asn Phe His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Asn Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn His Ile Leu Leu Ser Ile Leu Phe
165 170 175

Gly Cys Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Ile
180 185 190

Thr Ser Val Gly Arg Val Ile Pro Leu Ser Val Ser Leu Ser Thr Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Leu Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Lys Glu Phe Asp Thr Arg Glu Ile Arg Val Phe Glu Ile Lys Phe Ile
245 250 255

Glu Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Ile Thr Asn Tyr Met
260 265 270

Ile Leu Gly Glu Asn Ser Glu Ala Lys Val Cys Thr Ile Ala Val Asp
275 280 285

Gln Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr Tyr Asp Ser Asn Gly Ser Arg Asp Ser Ile Leu Val Val Thr Leu

305 310 315 320

Gly Ile Phe Glu Ala Ser Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala Asn Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Tyr Ile Ile Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Arg Leu Glu Gly Gln Glu Asn Cys Leu Glu Ser Ala Cys Arg Arg
370 375 380

Glu Ser Tyr Pro Met Cys Lys Gln Thr Ser Cys Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Val Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Glu Arg
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Arg
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Glu Asp Gln Phe Thr Val Thr Ser His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Phe Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Arg Tyr His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
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595 600 605

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<212> PRT
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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Ala Gly Val Arg Phe Arg Gln Val Ser
50 55 60

Thr Ser Asn Val Glu Phe Gly Arg Leu Leu Lys Asp Asp Leu Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Met Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn

100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ala Ile Gly Val Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Lys Thr Ser Glu Ile Ile Ser Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Arg Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asn Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Arg Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Val Ala Thr Trp Met Val Pro Ala Leu Val Ser
355 360 365

Glu Gln Gln Glu Gly Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Val Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Asn Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Ile Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Thr Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Glu Asn His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ser Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asp Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<211> 607
<212> PRT
<213> Canine morbillivirus

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Val Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Ser Val Arg Met Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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<212> PRT
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35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Met Pro Asp Tyr Ile Asp
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Ala Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Arg Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Ile Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr

530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ala Thr Thr Ser Val
580 585 590

Glu Asn Ser Val Arg Met Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Arg Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Val Val Ile Pro

325 330 335

Val Ala His Ser Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Asp Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

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Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn

115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Val Val Ile Pro
325 330 335

Val Ala His Ser Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Asp Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 133
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 133
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ser Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Ser Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Val Val Ile Pro
325 330 335

Val Ala His Ser Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Asp Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 134
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 134
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1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Asp Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Ile Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Val Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Ser Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp

545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Asp Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 135
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 135
Met Phe Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Met Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Thr Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
145 150 155 160

Lys Ser Ile Ala Ser Ala Ala Ser Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Lys Ser Glu Ile Ile Ser Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Leu
260 265 270

Val Leu Pro Glu Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
290 295 300

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
325 330 335

Val Ala His Ser Ser Val Glu Lys Met His Ile Thr Asn His Arg Gly

340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Val Leu Val Ser
355 360 365

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Asn Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Ile Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Val Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Pro Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Asp Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 136
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 136
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser

130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Glu Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Glu Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Pro Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr His Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Asp Val Tyr Asp Pro Ile Arg Lys
530 535 540

Ile Tyr Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 137
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 137
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Asn Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Ile Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Gly Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Lys Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 138
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 138
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
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Arg Val Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Lys Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Glu Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asn Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Ala Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Glu Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr His Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His

565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 139
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 139
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Thr
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Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Asn Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Ile Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser

355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 140
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 140
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Ile Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn His Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys

145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Glu Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Ile Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Ile Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Gly Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 141
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 141
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Lys Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Asn Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Ile Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Gly Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 142
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 142
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Asn Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Ile Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Thr Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Tyr Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Cys Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val

580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 143
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 143
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Arg
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Met Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ser Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Ser Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Ser His Asp Asp Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Ile Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg

370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Gly Arg Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Ile Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Arg Thr Gln Asn Phe Arg Tyr Val Ile Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asn Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val His Ile Arg Phe Ser Phe Asn Arg Ser Lys Pro
595 600 605

<210> 144
<211> 607
<212> PRT
<213> Canine morbillivirus

<400> 144
Met Leu Ser Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Ser Lys Leu Ser Leu Val Thr Glu Glu Gln Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Ile Ile Gly Ile Lys
145 150 155 160

Glu Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser

165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Thr
180 185 190

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
210 215 220

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Tyr Ile Glu
225 230 235 240

Glu Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
245 250 255

Lys Arg Trp Leu Asn Asn Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
260 265 270

Val Leu Pro Glu Ser Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Val Leu
290 295 300

Tyr His Asp Ser Ser Gly Pro Gln Asp Ser Ile Leu Val Val Thr Leu
305 310 315 320

Gly Met Phe Gly Ala Thr Leu Met Asp Gln Val Glu Lys Val Ile Pro
325 330 335

Val Ala His Pro Ser Val Glu Lys Ile His Ile Thr Asn His Arg Gly
340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
355 360 365

Glu Lys Gln Glu Glu Gln Gln Asn Cys Leu Glu Ser Ala Cys Gln Arg
370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Ser Leu Asp Pro Ser
405 410 415

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Gly Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
450 455 460

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
500 505 510

Leu Leu Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Val Ser
515 520 525

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Val Thr Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ser Lys Pro
595 600 605

<210> 145
<211> 527
<212> PRT
<213> Canine morbillivirus

<400> 145
Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
1 5 10 15

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
20 25 30

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
35 40 45

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
50 55 60

Lys Ile Lys Val Asn Phe Thr Asn Tyr Cys Asp Thr Ile Gly Ile Arg
65 70 75 80

Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
85 90 95

Gly Gly Arg Gly Asp Ile Phe Pro Pro Tyr Arg Cys Asn Gly Ala Thr
100 105 110

Ile Ser Val Gly Lys Ile Phe Pro Leu Ser Val Ser Leu Ser Met Ser
115 120 125

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
130 135 140

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Met Pro Asp Tyr Ile Glu
145 150 155 160

Gly Glu Phe Asp Thr Gln Lys Ile Arg Val Phe Glu Ile Gly Phe Ile
165 170 175

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
180 185 190

Val Leu Pro Glu Asn Ser Arg Ala Lys Val Cys Thr Ile Ala Val Gly
195 200 205

Glu Leu Thr Leu Ala Ser Leu Cys Val Asp Glu Ser Thr Val Leu Leu
210 215 220

Tyr His Asp Ser Asn Gly Ser Gln Asp Gly Val Leu Val Val Thr Leu
225 230 235 240

Gly Ile Phe Gly Ala Thr Ser Met Asp Gln Val Glu Glu Val Ile Pro
245 250 255

Val Ala Asp Pro Leu Val Glu Lys Ile His Ile Thr Asn His Arg Gly
260 265 270

Ile Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
275 280 285

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
290 295 300

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
305 310 315 320

Gly Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Pro Ser
325 330 335

Ile Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Ile Ile Leu
340 345 350

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asp Ser Gly
355 360 365

Trp Leu Thr Ile Pro Pro Lys Asn Gly Thr Val Leu Gly Leu Ile Asn
370 375 380

Lys Ala Ser Arg Gly Asp Gln Phe Thr Val Ile Pro His Val Leu Thr
385 390 395 400

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
405 410 415

Ser Gln Ile Met Asp Lys Asp Val Leu Thr Glu Ser Asn Leu Val Val
420 425 430

Leu Ser Thr Gln Asn Phe Arg Tyr Val Val Ala Thr Tyr Asp Ile Ser
435 440 445

Arg Asp Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
450 455 460

Ile Ser Tyr Thr Tyr Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
465 470 475 480

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asp Leu Trp Cys His
485 490 495

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Thr Asn Ser Thr Thr Ser Val
500 505 510

Glu Asn Leu Val Arg Met Arg Phe Ser Cys Asn Arg Ser Lys Pro
515 520 525

<210> 146
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 146
Met His Lys Gly Ile Pro Lys Ser Ser Lys Pro Gln Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Pro Glu Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Ser
35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Ile
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Val Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Lys Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 147

<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 147
Met His Lys Gly Ile Pro Lys Ser Ser Lys Pro Gln Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Pro Glu Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Ser
35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Ile
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Val Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr

405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Lys Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Arg Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 148
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 148
Met His Arg Gly Ile Pro Lys Ser Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Leu Glu Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Thr Ile Gln His Ile Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser His Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Met Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr

130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Glu Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Val Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ile Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Ser Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Ala Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Asp Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 149
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 149
Met His Lys Gly Ile Pro Lys Ser Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Leu Glu Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Thr Ile Gln His Ile Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Met Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Glu Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Val Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ile Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Ser Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Ala Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Asp Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 150
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 150
Met His Lys Gly Ile Pro Lys Ser Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Leu Glu Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Ala Thr Ile Gln His Ile Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Met Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Glu Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Val Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Arg Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ile Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Ser Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe

435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asn Gly Ala Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Gly Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Asp Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Ile Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 151
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 151
Met His Lys Ala Ile Pro Lys Ser Ser Lys Thr His Thr His Thr Gln
1 5 10 15

Gln Asn Arg Pro Ser Gln Pro Ser Thr Gly Pro Asp Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Leu Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser Tyr Arg Leu Glu Asn Ile Ser Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Arg Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Ser Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu

165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Val Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Ala Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Gly Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 152
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 152
Met His Lys Glu Ile Pro Lys Ser Ser Lys Thr His Thr His Thr Gln
1 5 10 15

Gln Asn Arg Pro Pro Gln Pro Ser Thr Gly Pro Asp Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr Asn Tyr
35 40 45

Asp Pro Arg Thr Leu Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser Tyr Arg Leu Glu Asn Ile Ser Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Ser Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Ala Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Gly Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 153
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 153
Met His Lys Glu Ile Pro Lys Ser Ser Lys Thr His Thr His Thr Gln
1 5 10 15

Gln Asn Arg Pro Pro Gln Pro Ser Thr Gly Pro Asp Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr Asn Tyr
35 40 45

Asp Pro Arg Thr Leu Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser Tyr Arg Leu Glu Asn Ile Ser Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Ser Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Ala Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg

465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Gly Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 154
<211> 662

<212> PRT
<213> Canine morbillivirus

<400> 154
Met His Lys Glu Ile Pro Lys Ser Ser Lys Thr His Thr His Thr Gln
1 5 10 15

Gln Asn Arg Pro Pro Gln Pro Ser Thr Gly Pro Asp Glu Thr Arg Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr Asn Tyr
35 40 45

Asp Pro Arg Thr Leu Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser Tyr Arg Leu Glu Asn Ile Ser Val His
65 70 75 80

Gly Asn His Glu Ala Ile Ile Gln His Met Pro Glu Ser Val Ser Lys
85 90 95

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Ser Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys

195 200 205

Asn Val Lys Pro Leu Glu Ser Leu Gly Ser Ala Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Gly Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 155
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 155
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Ser Thr Pro Thr Gln
1 5 10 15

Gln Asp Pro Pro Pro Gln His Ser Ile Lys Ser Ala Gly Ala Lys Val
20 25 30

Ser Gln Ala Arg His Asn Thr Thr Ser Ala His Gln Ser Thr Arg His
35 40 45

Gly Pro Arg Ile Ser Asp Arg Pro Thr His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Cys Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Ala Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Met Ile Ser Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Leu Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 156
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 156
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Ser Thr Pro Thr Gln
1 5 10 15

Pro Glu Pro Pro Pro Gln His Ser Ile Lys Ser Ala Gly Ala Lys Val
20 25 30

Ser Gln Ala Arg His Asn Thr Thr Ser Ala His Gln Ser Thr Arg His
35 40 45

Gly Pro Arg Ile Ser Asp Arg Pro Thr His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Cys Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Arg Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Ala Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr

500 505 510

Ser Thr Met Ile Ser Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Leu Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 157
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 157
Met His Asn Lys Thr Pro Lys Gly Ser Lys Thr Pro Thr Pro Thr Gln
1 5 10 15

Gln Asp Pro Pro Pro Gln His Ser Ile Lys Ser Ala Gly Ala Lys Ala
20 25 30

Ser Gln Ala Arg His Asn Thr Thr Ser Ala His Gln Ser Thr Arg His
35 40 45

Gly Pro Arg Ile Ser Asp Arg Pro Thr His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Cys Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Cys Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala

225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Ala Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Met Ile Ser Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Leu Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 158
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 158
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Pro Thr Pro Thr Gln
1 5 10 15

Gln Asp Pro Pro Pro Gln His Ser Ile Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg Tyr Asn Ile Thr Ser Ala Gln Gln Ser Thr Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 159
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 159
Met His Asn Lys Ile Pro Lys Gly Ser Lys Ile Pro Thr Pro Thr Gln
1 5 10 15

Gln Asp Pro Ser Pro Gln His Ser Ile Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Asn Thr Thr Ser Ala Gln Arg Pro Thr Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Pro Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Glu Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Ile Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Ser Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Ile Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val

530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Val Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Arg Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 160
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 160
Met His Asn Lys Ile Pro Lys Gly Ser Lys Ile Leu Thr Pro Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Arg His Asn Ile Lys Ser Ala Glu Thr Arg Thr
20 25 30

Ser Pro Ala Arg His Ser Ile Thr Ser Ala Arg Arg Ser Thr Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Val His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Met Arg Ser Arg Phe Lys Arg Arg Gln Ser Ser Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala

260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile Gln Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Val Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 161
<211> 662
<212> PRT

<213> Canine morbillivirus

<400> 161

Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Leu Thr Thr Thr Gln
1 5 10 15

Gln Asp Phe Pro Gln Arg His Ser Ile Lys Ser Ala Glu Thr Gln Thr
20 25 30

Ser Gln Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Ala Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Lys Asp His Glu Gly Ile Ile His His Thr Pro Glu Arg Val Ser Gln
85 90 95

Gly Met Arg Phe Arg Phe Lys Arg Arg Gln Ser Ser Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Ile Ala Leu Val Leu Leu Phe
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Leu Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 162
<211> 661
<212> PRT
<213> Canine morbillivirus

<400> 162
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Leu Thr Thr Thr Gln
1 5 10 15

Gln Asp Phe Pro Gln Arg His Ser Ile Lys Ser Ala Glu Thr Gln Thr
20 25 30

Ser Gln Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Ala Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Lys Asp His Glu Gly Ile Ile His His Thr Pro Glu Arg Val Ser Gln
85 90 95

Gly Met Arg Phe Arg Phe Lys Arg Arg Gln Ser Ser Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Lys Leu Met Pro Asn Val Ser Leu Ile
165 170 175

Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu Ser
180 185 190

Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys Asn
195 200 205

Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg Phe
210 215 220

Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala Ala
225 230 235 240

Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala Gln
245 250 255

Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala Ile
260 265 270

Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln Gly
275 280 285

Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His Met
290 295 300

Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg Tyr
305 310 315 320

Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro Ile
325 330 335

Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly Glu
340 345 350

Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met Ile
355 360 365

Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val Asp
370 375 380

Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu Ser
385 390 395 400

Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr Asn
405 410 415

Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala Thr
420 425 430

Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe Val
435 440 445

Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser Pro
450 455 460

Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg Thr
465 470 475 480

Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly Asn
485 490 495

Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr Gly
500 505 510

Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala Ser
515 520 525

Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val Gly
530 535 540

Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu Gly
545 550 555 560

Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly Asn

565 570 575

Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser Asn
580 585 590

Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser Leu
595 600 605

Leu Ser Val Pro Ile Leu Ile Cys Ile Ala Leu Val Leu Leu Phe Leu
610 615 620

Ile Cys Cys Cys Lys Arg Arg Tyr Leu Gln Thr Leu Lys Gln His Thr
625 630 635 640

Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys Ser
645 650 655

Tyr Val Arg Ser Leu
660

<210> 163
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 163
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Leu Thr Thr Thr Gln
1 5 10 15

Gln Asp Phe Pro Lys Arg His Ser Ile Lys Ser Ala Glu Thr Gln Thr
20 25 30

Ser Gln Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Pro Glu Arg Val Ser Gln
85 90 95

Gly Met Arg Phe Arg Phe Lys Arg Arg Gln Ser Ser Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser Asn Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Thr Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Ile Pro Ala Met Gln His

290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Val Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Leu Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 164
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 164
Met His Asn Lys Ile Pro Lys Gly Ser Lys Thr Leu Thr Pro Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Arg His Ser Ile Lys Ser Ala Glu Thr Gln Thr

20 25 30

Ser Gln Ala Arg His Ser Ile Thr Ser Ala His Arg Ser Ala Arg His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Pro Cys Lys Gln Ala Gly Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Pro Glu Arg Val Ser Gln
85 90 95

Gly Met Arg Ser Arg Phe Lys Arg Arg Gln Ser Ser Ala Thr Ser Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser Arg Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln Gln
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Ile Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Val Leu Leu Phe
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His
625 630 635 640

Thr Lys Ile Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 165
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 165
Met His Asn Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Glu Leu Ala Glu Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Thr Met Asn Arg Ile
50 55 60

Arg Ser Arg Lys Gln Ala Ser His Arg Ser Glu Asn Ile Pro Val His
65 70 75 80

Gly Asn His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Leu Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Glu Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Ala Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Val Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Ile Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Ser Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser

595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Phe
610 615 620

Met Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 166
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 166
Met His Asn Lys Ile Pro Lys Arg Ser Asn Thr Arg Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln Pro Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Ile Thr Ser Ala Arg Arg Ser Thr His His
35 40 45

Asp Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Ile Met Asn Arg Ile
50 55 60

Arg Ser Cys Lys Gln Thr Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Pro Gly Ser Val Pro Gln
85 90 95

Gly Ser Gly Ser Gln Ile Lys Arg Arg Gln Ser Asn Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Ala Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Glu Asn Cys Thr Lys Ala Lys Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro

325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Ser Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 167
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 167
Met His Asn Lys Ile Pro Lys Arg Ser Asn Thr Arg Lys His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Arg Arg Ser Thr His His
35 40 45

Gly Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Ile Met Asn Arg Ile

50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Val Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 168
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 168
Met His Asn Lys Ile Pro Lys Arg Ser Asn Thr Arg Lys His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Arg Arg Ser Thr His His
35 40 45

Gly Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Ile Met Asn Arg Ile
50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Val Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn

625 630 635 640

Ala Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 169
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 169
Met His Asn Lys Ile Pro Lys Arg Ser Asn Thr Arg Lys His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Arg Arg Ser Thr His His
35 40 45

Gly Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Ile Met Asn Arg Ile
50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met

355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 170
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 170
Met His Asn Lys Ile Pro Lys Arg Ser Asn Thr Arg Lys His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Arg Arg Ser Thr His His
35 40 45

Gly Pro Leu Thr Ser Asp Arg Pro Ile His Tyr Ile Met Asn Arg Ile
50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln

85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Ala Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Ala Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Lys Ser Leu
660

<210> 171
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 171
Met His Asn Lys Ile Pro Lys Arg Ser Lys Thr Arg Lys His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Ala His His
35 40 45

Gly Ser Leu Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Val
50 55 60

Arg Ser Cys Lys Gln Ala Gly His Lys Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Thr Ile His His Thr Pro Gly Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Arg Leu Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Thr Thr Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Ser Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Ser Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Lys Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Pro Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Ile Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Asp Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Leu Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu

660

<210> 172
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 172
Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Thr Arg His Ser Ile Thr Pro Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Arg Ser Arg Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu

385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Ile Thr Val Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn His Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 173
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 173
Met His Asn Lys Ile Pro Glu Arg Ser Arg Ile Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Tyr Ser Thr Lys Ser Val Glu Thr Glu Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Met His His
35 40 45

Gly Pro Leu Thr Leu Glu Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Lys Pro Glu Ser Val Ser Gln
85 90 95

Gly Thr Arg Ser Gln Phe Lys Arg Arg Arg Ser Asp Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser

115 120 125

Leu Phe Ile Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ser Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ala Leu Ile Glu Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Leu Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 174
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 174
Met His Asn Lys Ile Pro Glu Arg Ser Arg Ile Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Tyr Ser Thr Lys Ser Val Glu Thr Glu Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Met His His
35 40 45

Gly Pro Leu Thr Leu Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Lys Pro Glu Ser Val Ser Gln
85 90 95

Gly Thr Arg Ser Gln Phe Lys Arg Arg Arg Ser Asp Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Ile Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ser Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

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Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
        275                 280                 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
    290                 295                 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305                 310                 315                 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
                325                 330                 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
            340                 345                 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
        355                 360                 365

Ile Ala Ile Leu Glu Ser Gln Gly Ile Lys Thr Lys Ile Thr His Val
    370                 375                 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385                 390                 395                 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
                405                 410                 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
            420                 425                 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
        435                 440                 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
    450                 455                 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465                 470                 475                 480
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Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ala Leu Ile Glu Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Leu Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 175
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 175
Met His Asn Lys Ile Pro Glu Arg Ser Arg Ile Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Tyr Ser Thr Lys Ser Val Glu Thr Glu Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Met His His
35 40 45

Gly Pro Leu Thr Leu Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Lys Pro Glu Ser Val Ser Gln
85 90 95

Gly Thr Arg Ser Gln Phe Lys Arg Arg Arg Ser Asp Ala Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Ile Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ser Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Gln Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala

420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ala Leu Ile Glu Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Leu Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 176
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 176
Met His Asn Lys Ile Pro Glu Arg Ser Arg Ile Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Val Glu Thr Asp Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Met His His
35 40 45

Gly Pro Leu Thr Leu Asp Arg Pro Val His Tyr Ile Met Ser Arg Thr
50 55 60

Arg Ser Arg Lys Gln Ala Ser Asp Arg Ser His Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Lys Gly Ile Ile His His Lys Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Gln Phe Lys Lys Arg Arg Tyr Asp Thr Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Ile Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg

145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ser Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Ile Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Glu Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Pro Ser Leu Ser Phe Ser Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Leu Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 177
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 177
Met His Asn Lys Ile Pro Glu Arg Ser Arg Ile Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Val Glu Thr Asp Thr
20 25 30

Ser Gln Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Met His His
35 40 45

Gly Pro Leu Thr Leu Asp Arg Pro Val His Tyr Ile Met Ser Arg Thr
50 55 60

Arg Ser Arg Lys Gln Ala Ser Tyr Arg Ser His Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Lys Gly Ile Ile His His Lys Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Gly Ser Gln Phe Lys Lys Arg Arg Tyr Asp Thr Thr Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Ile Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ser Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Glu Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Pro Ser Leu Ser Phe Ser Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Leu Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 178
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 178
Met His Glu Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Ser Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ala Asp Trp Pro Asp Tyr Tyr Ile Met Lys Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Asp Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Lys Ser Arg Leu Lys Met Gly Gln Ser Asn Ala Val Lys Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Asp Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Ile Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Val Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser

450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr His Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Arg
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 179
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 179
Met His Glu Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
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Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Ser Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ala Asp Trp Pro Asp Tyr Tyr Ile Met Lys Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Asp Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Lys Ser Arg Leu Lys Met Gly Gln Ser Asn Ala Val Lys Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Asp Glu Tyr Glu Lys Leu Leu

180 185 190

Ser Ser Ile Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Val Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr His Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Arg
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 180
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 180
Met His Glu Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Ser Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ala Asp Trp Pro Asp Tyr Tyr Ile Met Lys Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Asp Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Lys Ser Arg Leu Lys Met Gly Gln Ser Asn Ala Val Lys Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Asp Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Ile Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Val Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Ser Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr His Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Arg
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 181
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 181
Met His Glu Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Ser Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ala Asp Trp Pro Asp Tyr Tyr Ile Met Lys Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Asp Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Lys Ser Arg Leu Lys Met Gly Gln Ser Asn Ala Val Lys Ser
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Asp Glu Tyr Glu Lys Leu Leu
180 185 190

Ser Ser Ile Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Val Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly

485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr His Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Ala Ser Arg
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 182
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 182

Met His Lys Lys Ile Pro Lys Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln His Ser Thr Lys Ser Ala Glu Ser Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Asp Pro Arg Thr Ala Asp Trp Pro Asp Tyr Tyr Ile Met Lys Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Asp Gly Ile Ile His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Lys Ser Arg Leu Lys Met Gly Gln Ser Asn Ala Val Lys Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Val Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Asp Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg

210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Val Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 183
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 183
Met His Lys Glu Ile Pro Glu Arg Ser Arg Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Lys Ser Thr Glu Tyr Thr Glu Ile Lys Thr
20 25 30

Ser Arg Ala Arg His Gly Ile Thr Pro Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Leu Asp Arg Leu Val Cys Tyr Ile Met Asn Arg Ala
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Leu Glu Ser Val Ser Gln
85 90 95

Gly Ala Arg Ser Gln Leu Lys Arg Arg Pro Ser Asn Ala Ile Asn Ser
100 105 110

Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Val Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Ala Val Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ala Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 184
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 184
Met His Lys Glu Ile Pro Glu Arg Ser Arg Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Lys Ser Thr Glu Tyr Thr Glu Ile Lys Thr
20 25 30

Ser Arg Ala Arg His Gly Ile Thr Pro Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Leu Asp Arg Leu Val Cys Tyr Ile Met Asn Arg Ala
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Leu Glu Ser Val Ser Gln
85 90 95

Gly Ala Arg Ser Gln Leu Lys Arg Arg Pro Ser Asn Ala Ile Asn Ser
100 105 110

Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Ile Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala

515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Ala Val Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 185
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 185
Met His Lys Glu Ile Pro Glu Lys Ser Arg Thr Arg Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Lys Ser Thr Glu Tyr Thr Glu Ile Lys Thr
20 25 30

Ser Arg Ala Arg His Gly Ile Thr Pro Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Leu Asp Arg Leu Val Cys Tyr Ile Met Asn Arg Ala
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Ala Arg Ser Gln Leu Lys Arg Arg Thr Ser Asn Ala Ile Asn Ser
100 105 110

Gly Phe Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala

245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Ile Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Thr Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Ile Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Ala Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Arg Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 186
<211> 659
<212> PRT
<213> Canine morbillivirus

<400> 186
Met His Lys Lys Ile Pro Glu Arg Ser Arg Thr Tyr Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Gln Gln Asp Asn Thr Lys Tyr Thr Glu Ile Lys Thr
20 25 30

Ser Arg Ala Arg His Gly Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Leu Asp Arg Leu Val Tyr Tyr Ile Met Asn Arg Ser
50 55 60

Met Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Leu Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Pro Lys Ser Val Ser Gln
85 90 95

Gly Ala Arg Ser Gln Leu Lys Arg Arg Gln Ser Asn Ala Ile Asn Ser
100 105 110

Gly Phe Gln Tyr Val Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Thr Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Ser Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asp Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Ile Ala Ser Asp Thr
515 520 525

Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val Gly Gly Arg
530 535 540

Gln Tyr Pro Asp Leu Val Tyr Glu Ser Lys Val Ala Leu Gly Pro Ala
545 550 555 560

Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly Asn Ala Leu
565 570 575

Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser Asn Gln Ile
580 585 590

Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser Leu Leu Ser
595 600 605

Val Pro Ile Leu Ser Cys Ala Val Leu Ala Leu Leu Leu Leu Ile Tyr
610 615 620

Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn Thr Lys Val
625 630 635 640

Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys Ser Tyr Val
645 650 655

Arg Ser Leu

<210> 187
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 187
Met His Lys Lys Ile Pro Glu Arg Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Pro Arg Gln Tyr Ser Thr Lys Tyr Thr Glu Ile Lys Ile
20 25 30

Ser Arg Ala Arg His Gly Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Ser Asp Arg Leu Val His Tyr Ile Met Asn Arg Thr
50 55 60

Ile Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Gly Val Val His His Thr Pro Glu Ser Val Pro Gln
85 90 95

Gly Ser Gly Ser Gln Leu Lys Arg Arg Gln Ser Asn Ala Phe Asn Ser
100 105 110

Gly Ser Gln Tyr Ile Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Arg Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu

545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Val Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 188
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 188
Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Arg Thr His Thr Arg
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Gln Asp Leu Ser Pro Gln His Ser Thr Lys Ser Ile Gly Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Val Leu Gln Ser Thr His Leu
35 40 45

Gly Pro Gln Thr Ser Asp Arg Pro Val His Tyr Ile Lys Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Gly Asn Ile Ser Ala His
65 70 75 80

Arg Asp His Asp Gly Ile Val His His Ala Pro Glu Ser Val Ser Gln
85 90 95

Glu Ala Arg Ser Leu Phe Lys Arg Arg Gln Ser Asn Ala Thr Asp Ser
100 105 110

Gly Phe Gln Cys Thr Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Arg Thr Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Asn Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln

275 280 285

Gly Ile Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Ala Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 189
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 189
Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Arg Thr His Thr Arg

1 5 10 15

Gln Asp Leu Ser Pro Gln His Ser Thr Lys Ser Ile Gly Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Val Leu Gln Ser Thr His Leu
35 40 45

Gly Pro Gln Thr Ser Asp Arg Pro Val His Tyr Ile Lys Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Gly Asn Ile Ser Ala His
65 70 75 80

Arg Asp His Asp Gly Ile Val His His Ala Pro Glu Ser Val Ser Gln
85 90 95

Glu Ala Arg Ser Leu Phe Lys Arg Arg Gln Ser Asn Ala Thr Asp Ser
100 105 110

Gly Phe Gln Cys Thr Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Arg Thr Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Asn Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

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Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225                 230                 235                 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
                245                 250                 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
            260                 265                 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
        275                 280                 285

Gly Ile Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
    290                 295                 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305                 310                 315                 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
                325                 330                 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
            340                 345                 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
        355                 360                 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
    370                 375                 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385                 390                 395                 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
                405                 410                 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
            420                 425                 430
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Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 190
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 190
Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Arg Thr His Thr Arg
1 5 10 15

Gln Asp Leu Ser Pro Gln His Ser Thr Lys Ser Ile Gly Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Val Leu Gln Ser Thr His Leu
35 40 45

Gly Pro Gln Thr Ser Asp Arg Pro Val His Tyr Ile Lys Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Gly Asn Ile Ser Ala His
65 70 75 80

Arg Asp His Asp Gly Ile Val His His Ala Pro Glu Ser Val Ser Gln
85 90 95

Glu Ala Arg Ser Leu Phe Lys Arg Arg Gln Ser Asn Ala Thr Asp Ser
100 105 110

Gly Phe Gln Cys Thr Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Arg Thr Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Asn Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Ile Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser

580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 191
<211> 662
<212> PRT
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Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Arg Thr His Thr Arg
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Gln Gly Leu Ser Pro Gln His Ser Thr Lys Ser Ile Gly Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Ala Leu Gln Ser Thr His Leu
35 40 45

Gly Pro Gln Thr Ser Asp Arg Pro Val His Tyr Ile Lys Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Gly Asn Ile Ser Ala His
65 70 75 80

Arg Asp His Asp Gly Ile Ile His His Ala Pro Glu Ser Val Ser Gln
85 90 95

Glu Ala Arg Ser Leu Ser Lys Arg Arg Gln Ser Asn Ala Thr Asp Ser
100 105 110

Gly Phe Gln Cys Thr Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Arg Thr Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Asn Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg

305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 192
<211> 662
<212> PRT
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<400> 192
Met His Asn Lys Ile Pro Lys Arg Ser Arg Thr Arg Thr His Thr Arg
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Gln Asp Leu Ser Pro Gln His Ser Thr Glu Ser Ile Gly Thr Lys Thr
20 25 30

Ser Arg Gly Arg His Ile Ile Thr Ser Ala Leu Gln Ser Thr His Leu

35 40 45

Gly Pro Gln Thr Ser Asp Arg Pro Val His Tyr Ile Lys Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Ser Tyr Arg Ser Gly Asn Ile Ser Ala His
65 70 75 80

Arg Asp His Asp Gly Ile Ile His His Ala Pro Glu Ser Val Ser Gln
85 90 95

Glu Ala Arg Ser Leu Phe Lys Arg Arg Gln Ser Asn Ala Thr Asp Ser
100 105 110

Gly Phe Gln Cys Thr Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Arg Thr Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Asn Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Leu Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Val Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Cys Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

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<400> 193
Met His Asn Lys Ile Leu Glu Gly Ser Lys Thr Gln Met His Thr Gln
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Gln Asn Pro Pro Ser Gln His Ser Thr Lys Ser Ser Gly Thr Lys Thr
20 25 30

Ser Gln Thr Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ala Asp Arg Pro Val His Tyr Thr Met Asp Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Gly His Arg Ser Asp Ser Ile Pro Val Arg
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Leu Glu Gly Ile Ser Gln
85 90 95

Gly Ala Arg Ser Arg Phe Lys Arg Arg Gln Ser Thr Ala Thr Ser Pro
100 105 110

Gly Pro Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Glu Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Ser Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Arg Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Leu Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu

610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Arg Gln Asn
625 630 635 640

Pro Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 194
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 194
Met His Asn Lys Ile Leu Glu Gly Ser Lys Thr Gln Met His Thr Gln
1 5 10 15

Gln Asn Pro Pro Ser Gln His Ser Thr Lys Ser Ser Gly Thr Lys Thr
20 25 30

Ser Gln Thr Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val His Tyr Thr Met Asp Arg Thr
50 55 60

Arg Ser Cys Lys Gln Ala Gly His Arg Ser Asp Ser Ile Pro Val Arg
65 70 75 80

Gly Asp His Glu Gly Ile Ile His His Thr Leu Glu Ser Ile Ser Gln
85 90 95

Gly Ala Arg Ser Arg Phe Lys Arg Arg Gln Ser Thr Ala Thr Ser Pro
100 105 110

Gly Pro Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Glu Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Ala Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Ile Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly

340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Arg Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Leu Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Pro Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Arg Gln Asn
625 630 635 640

Pro Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 195
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 195
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr Tyr
35 40 45

Ser Pro Gln Ala Leu Asp Arg Ser Ile His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asn Asn Ile Pro Pro His

65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Ala Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 196
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 196
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr Tyr
35 40 45

Ser Pro Gln Thr Leu Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asn Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His Tyr Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

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Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225                 230                 235                 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
                245                 250                 255

Gln Ala Ile Gln Ser Leu Arg Ala Ser Leu Glu Gln Ser Asn Lys Ala
            260                 265                 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
        275                 280                 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
    290                 295                 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305                 310                 315                 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
                325                 330                 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
            340                 345                 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
        355                 360                 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
    370                 375                 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385                 390                 395                 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
                405                 410                 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
            420                 425                 430
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Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys

645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 197
<211> 661
<212> PRT
<213> Canine morbillivirus

<400> 197
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Arg Ser Thr Tyr His Gly
35 40 45

Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr Arg
50 55 60

Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His Arg
65 70 75 80

Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln Gly
85 90 95

Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala Gly
100 105 110

Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser Leu
115 120 125

Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr Ile
130 135 140

Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg Pro
145 150 155 160

Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu Ile
165 170 175

Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu Asn
180 185 190

Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn Asn
195 200 205

Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg Phe
210 215 220

Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala Ala
225 230 235 240

Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala Gln
245 250 255

Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala Ile
260 265 270

Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln Gly
275 280 285

Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His Met
290 295 300

Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg Tyr
305 310 315 320

Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro Ile
325 330 335

Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly Glu
340 345 350

Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met Ile
355 360 365

Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val Asp

370 375 380

Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu Ser
385 390 395 400

Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr Asn
405 410 415

Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr
420 425 430

Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe Val
435 440 445

Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser Pro
450 455 460

Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg Thr
465 470 475 480

Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly Asn
485 490 495

Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr Ser
500 505 510

Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala Ser
515 520 525

Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val Gly
530 535 540

Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu Gly
545 550 555 560

Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly Asn
565 570 575

Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser Asn
580 585 590

Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser Leu
595 600 605

Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu Leu
610 615 620

Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn Thr
625 630 635 640

Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys Ser
645 650 655

Tyr Val Arg Ser Leu
660

<210> 198
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 198
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala

100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 199
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 199
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Ser Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 200

<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 200
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr

405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asn Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Val Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 201
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 201
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Asn Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr

130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 202
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 202
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Val Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Pro Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 203
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 203
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Pro Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Val Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Met Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Lys Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Pro Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe

435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 204
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 204
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Ser Val His Cys Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu

165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile His Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Ser Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Arg Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 205
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 205
Met His Asn Lys Ile Ser Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Asn Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Val Pro Pro His
65 70 75 80

Arg Asp His Glu Asp Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Ile Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Ala Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 206
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 206
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Thr Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Ser
195 200 205

Asn Val Lys Pro Leu Gln Ala Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg

465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Ala Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 207
<211> 662

<212> PRT
<213> Canine morbillivirus

<400> 207
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Thr Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Ser

195 200 205

Asn Val Lys Pro Leu Gln Ala Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 208
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 208
Met His Ser Thr Thr Pro Lys Asn Ser Lys Pro Leu Pro His Ile Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Ser Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln His Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Lys His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Ser Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Thr Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Gly Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 209
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 209
Met His Ser Thr Thr Pro Lys Asn Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Lys His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Ser Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr

500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 210
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 210
Met His Ser Lys Thr Leu Lys Asn Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Thr Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala

225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 211
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 211
Met His Ser Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Leu Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Gln Tyr Ser Leu Thr Ser Asp Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Gly Ser Val His Cys Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Arg Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 212
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 212
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro Asn Pro Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Ser Val His His Thr Met Asn Arg Thr
50 55 60

Arg Ser Arg Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Asn Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val

530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 213
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 213
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Pro Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Lys Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Phe His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Tyr Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala

260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Thr Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 214
<211> 660
<212> PRT

<213> Canine morbillivirus

<400> 214

Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Ile Arg Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Gly Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Lys Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Arg
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Tyr Thr Trp Leu Val Leu Trp Cys Gly Ile Ala Ser Leu
115 120 125

Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr Ile
130 135 140

Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg Pro
145 150 155 160

Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu Ile
165 170 175

Asp Asn Cys Thr Lys Glu Leu Gly Glu Tyr Glu Lys Leu Leu Asn Ser
180 185 190

Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn Asn Val
195 200 205

Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg Phe Ala
210 215 220

Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala Ala Gln
225 230 235 240

Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala Gln Ala
245 250 255

Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala Ile Glu
260 265 270

Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln Gly Val
275 280 285

Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His Met Ser
290 295 300

Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg Tyr Tyr
305 310 315 320

Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro Ile Ser
325 330 335

Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly Glu Ile
340 345 350

His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met Ile Ala
355 360 365

Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val Asp Leu
370 375 380

Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu Ser Glu
385 390 395 400

Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr Asn Ile
405 410 415

Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala Thr Asn
420 425 430

Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe Val Ser
435 440 445

Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser Pro Ile
450 455 460

Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg Thr Leu
465 470 475 480

Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly Asn Ile
485 490 495

Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr Ser Thr
500 505 510

Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala Ser Asp
515 520 525

Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val Gly Gly
530 535 540

Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu Gly Pro
545 550 555 560

Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly Asn Ala
565 570 575

Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser Asn Gln
580 585 590

Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser Leu Leu
595 600 605

Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu Leu Ile
610 615 620

Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Phe Lys His Asn Thr Lys
625 630 635 640

Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys Ser Tyr
645 650 655

Val Arg Ser Leu
660

<210> 215
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 215
Met His Asn Lys Ile Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asp Pro Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg His Ser Thr Thr Ser Ala Gln Gln Ser Thr His His
35 40 45

Ser Pro Arg Thr Ser Asp Arg Ser Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ser Ser Ser Trp Cys Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Leu Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Phe Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Val Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Arg Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly

565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 216
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 216
Met His Asn Lys Thr Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asn Pro Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asn Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Met Gln Thr Ser His Arg Ser Asp Asn Ile Pro Asp His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Val Gly Phe Trp Phe Lys Arg Arg Arg Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Leu Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His

290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Ile Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Met Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 217
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 217
Met His Asn Lys Thr Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asn Pro Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr

20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asn Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Met Gln Thr Ser His Arg Ser Asp Asn Ile Pro Asp His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Val Gly Phe Trp Phe Lys Arg Arg Arg Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Leu Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Ile Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Met Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 218
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 218
Met His Asn Lys Thr Pro Lys Lys Ser Lys Pro Leu Pro His Thr Arg
1 5 10 15

Gln Asn Pro Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr His His
35 40 45

Gly Pro Arg Thr Ser Asn Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Met Gln Thr Ser His Arg Ser Asp Asn Ile Leu Asp His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Val Gly Phe Trp Phe Lys Arg Arg Arg Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Leu Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Ile Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Lys Arg Ser Ser Phe Asn Phe Gly Ser

595 600 605

Met Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 219
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 219
Met His Asn Lys Ile Pro Lys Arg Ser Lys Thr Leu Pro His Thr Arg
1 5 10 15

Gln Asp Leu Leu Gln Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Ser Ser Ala Gln Arg Ser Ala His His
35 40 45

Gly Pro Leu Thr Ser Asn Arg Pro Val His Tyr Ile Met Asn Arg Thr
50 55 60

Arg Ser Cys Lys Gln Thr Ser His Arg Ser Asp Asn Ile Pro Ala His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Gly Val Thr Gln
85 90 95

Gly Ala Ser Ser Trp Phe Lys Arg Arg Gln Ser Asn Ala Ser Asn Pro
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Met Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Asn Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro

325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Phe Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Ala Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Lys Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Ile Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Ile Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Val Tyr Cys Cys Lys Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Pro Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 220
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 220
Met His Asn Lys Ile Pro Lys Lys Ser Asn Pro Arg Gln His Thr Arg
1 5 10 15

Gln Asp Leu Leu Gln Gln His Ser Thr Arg Ser Thr Glu Thr Lys Thr
20 25 30

Ser Gln Gly Arg Tyr Ser Ile Thr Ser Ala Gln Arg Ser Thr Tyr His
35 40 45

Ser Pro Leu Ala Leu Asp Arg Ser Ile His Tyr Ile Met Asn Arg Thr

50 55 60

Arg Ser Cys Lys Gln Ala Ser His Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Arg Asp His Glu Gly Ile Ile His His Thr Pro Glu Ser Val Thr Gln
85 90 95

Gly Ala Gly Ser Trp Leu Lys Arg Trp Gln Ser Asn Ala Thr Asn Ala
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Val Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Asn
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Leu Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Ile
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Glu Tyr Val Ala
420 425 430

Thr Ile Gly Tyr Leu Ile Ser Asn Leu Asp Glu Ser Pro Cys Val Ser
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Phe Leu Tyr Pro Met Ser
450 455 460

Arg Ser Thr Gln Gln Cys Ile Arg Arg Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Leu Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Gly Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Asp Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Asp Lys Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ile Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Arg Gln Thr Phe Lys His Asn
625 630 635 640

Ala Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 221
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 221
Met His Lys Lys Phe Phe Lys Asn Ser Thr Thr Gln Thr His Thr Gln
1 5 10 15

Gln Asp Leu Leu Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Ser Arg Ala Arg His Ser Ile Thr Ser Val Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Val Tyr Tyr Thr Val Asn Arg Thr
50 55 60

Gly Ser Cys Lys Gln Ala Ser Tyr Arg Ser Asp Asn Ile Pro Pro His
65 70 75 80

Gly Asp His Glu Gly Thr Val Leu His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Met Arg Ser Trp Pro Lys Gly Arg Gln Ser Asn Ala Ile Asn Thr
100 105 110

Asp Ser His Cys Ala Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Val
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Val Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Ile Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Val Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Leu
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Thr Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Ala Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Gln Gln Thr Ile Lys Gln Asn

625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 222
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 222
Met His Arg Lys Pro Pro Lys Lys Ser Lys Thr Gln Thr His Thr Gln
1 5 10 15

Arg Asp Pro Pro Pro Gln His Ser Thr Lys Ser Ala Glu Thr Lys Thr
20 25 30

Pro Arg Ala Arg His Ser Ile Thr Ser Ala Gln Arg Ser Thr His Tyr
35 40 45

Gly Pro Arg Thr Ser Asp Arg Pro Ile His Tyr Thr Val Asn Arg Thr
50 55 60

Gly Ser Cys Lys Gln Ala Ser Tyr Arg Leu Asp Asn Ile Pro Pro His
65 70 75 80

Gly Asp His Glu Gly Thr Val Leu His Thr Pro Glu Ser Val Ser Gln
85 90 95

Gly Val Arg Ser Lys Pro Lys Gly Arg Gln Ser Asn Ala Ile Asn Ile
100 105 110

Ala Ser His Cys Ala Trp Leu Ile Leu Trp Cys Ile Gly Ile Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Pro Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Lys Pro Leu Gln Ser Ile Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Ala Gln Glu Thr Val Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Asn Asp Met

355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Pro Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Val Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Val Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Thr Ser Cys Ala Arg
465 470 475 480

Thr Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Val Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Ser Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Gln Gln Thr Ile Lys Gln Asn
625 630 635 640

Thr Lys Val Asp Pro Thr Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 223
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 223
Met His Gly Glu Ile Pro Thr Gly Ser Thr Thr Arg Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Ser His Pro Ser Thr Lys Pro Asp Glu Thr Arg Ile
20 25 30

Ser Arg Thr Gln His Gly Thr Thr Ser Ala Lys Arg Ser Thr Asp His
35 40 45

Asp Pro Arg Lys Ser Asp Arg Pro Val His Tyr Thr Met Asn Arg Ala
50 55 60

Arg Ser His Lys His Ile Gly His Gly Pro Glu Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Ala Thr Thr Gln His Ile Pro Glu Ser Ala Ser Lys

85 90 95

Gly Ala Lys Ser Gln Leu Glu Arg Arg Gln Ser Asp Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Phe Gly Met Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Ser Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Arg Ser Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Leu Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Ser Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asn Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 224
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 224
Met His Gly Glu Ile Pro Thr Gly Ser Thr Thr Arg Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Ser His Pro Ser Thr Lys Pro Asp Glu Thr Arg Ile
20 25 30

Ser Arg Thr Gln His Gly Thr Thr Ser Ala Lys Arg Ser Thr Asp His
35 40 45

Asp Pro Arg Lys Ser Asp Arg Pro Val His Tyr Thr Met Asn Arg Ala
50 55 60

Arg Ser His Lys His Ile Gly His Gly Pro Glu Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Ala Thr Thr Gln His Ile Pro Glu Ser Ala Ser Lys
85 90 95

Gly Ala Lys Ser Gln Leu Glu Arg Arg Gln Ser Asp Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Phe Gly Thr Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Ser Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Arg Ser Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Leu Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu
385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Ser Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asn Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu

660

<210> 225
<211> 662
<212> PRT
<213> Canine morbillivirus

<400> 225
Met His Gly Glu Ile Pro Thr Gly Ser Thr Thr Arg Thr His Thr Gln
1 5 10 15

Gln Asp Arg Pro Ser His Pro Ser Thr Lys Pro Asp Glu Thr Arg Ile
20 25 30

Ser Arg Thr Gln His Gly Thr Thr Ser Ala Lys Arg Ser Thr Asp His
35 40 45

Asp Pro Arg Lys Ser Asp Arg Pro Val His Tyr Thr Met Asn Arg Ala
50 55 60

Arg Ser His Lys His Ile Gly His Gly Pro Glu Asn Ile Pro Ala His
65 70 75 80

Gly Asp His Glu Ala Thr Thr Gln His Ile Pro Glu Ser Ala Ser Lys
85 90 95

Gly Ala Lys Ser Gln Leu Glu Arg Arg Gln Ser Asp Ala Ile Asn Ser
100 105 110

Gly Ser Gln Cys Thr Trp Leu Val Leu Trp Cys Phe Gly Thr Ala Ser
115 120 125

Leu Phe Leu Cys Ser Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr
130 135 140

Ile Gly Ile Ile Gly Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg
145 150 155 160

Ser Ser His Gln Tyr Leu Val Ile Lys Leu Met Pro Asn Val Ser Leu
165 170 175

Ile Asp Asn Cys Thr Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu
180 185 190

Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys
195 200 205

Asn Val Arg Ser Leu Gln Ser Leu Gly Ser Gly Arg Arg Gln Lys Arg
210 215 220

Phe Ala Gly Val Val Leu Ala Gly Ala Ala Leu Gly Val Ala Thr Ala
225 230 235 240

Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala
245 250 255

Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala
260 265 270

Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu Thr Ile Ile Ala Val Gln
275 280 285

Gly Val Gln Asp Tyr Val Asn Asn Glu Leu Val Pro Ala Met Gln His
290 295 300

Met Ser Cys Glu Leu Val Gly Gln Arg Leu Gly Leu Lys Leu Leu Arg
305 310 315 320

Tyr Tyr Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro
325 330 335

Ile Ser Ala Glu Ile Ser Ile Gln Ala Leu Ser Tyr Ala Leu Gly Gly
340 345 350

Glu Ile His Lys Ile Leu Glu Lys Leu Gly Tyr Ser Gly Gly Asp Met
355 360 365

Ile Ala Ile Leu Glu Ser Arg Gly Ile Lys Thr Lys Ile Thr His Val
370 375 380

Asp Leu Leu Gly Lys Phe Ile Ile Leu Ser Ile Ser Tyr Pro Thr Leu

385 390 395 400

Ser Glu Val Lys Gly Val Ile Val His Arg Leu Glu Ala Val Ser Tyr
405 410 415

Asn Ile Gly Ser Gln Glu Trp Tyr Thr Thr Val Pro Arg Tyr Ile Ala
420 425 430

Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu Ser Ser Cys Val Phe
435 440 445

Val Ser Glu Ser Ala Ile Cys Ser Gln Asn Ser Leu Tyr Pro Met Ser
450 455 460

Pro Leu Leu Gln Gln Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg
465 470 475 480

Ser Leu Val Ser Gly Thr Met Gly Asn Lys Phe Ile Leu Ser Lys Gly
485 490 495

Asn Ile Val Ala Asn Cys Ala Ser Ile Leu Cys Lys Cys Tyr Ser Thr
500 505 510

Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala
515 520 525

Ser Asp Thr Cys Pro Leu Val Glu Ile Asp Gly Val Thr Ile Gln Val
530 535 540

Gly Gly Arg Gln Tyr Pro Asp Met Val Tyr Glu Ser Lys Val Ala Leu
545 550 555 560

Gly Pro Ala Ile Ser Leu Glu Arg Leu Asp Val Gly Thr Asn Leu Gly
565 570 575

Asn Ala Leu Lys Lys Leu Asp Asp Ala Lys Ile Leu Ile Asp Ser Ser
580 585 590

Asn Gln Ile Leu Glu Thr Val Arg Arg Ser Ser Phe Asn Phe Gly Ser
595 600 605

Leu Leu Ser Val Pro Ile Leu Ser Cys Thr Ala Leu Ala Leu Leu Leu
610 615 620

Leu Ile Tyr Cys Cys Arg Arg Arg Tyr Gln Gln Thr Leu Lys Gln Asn
625 630 635 640

Ala Lys Val Asn Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys
645 650 655

Ser Tyr Val Arg Ser Leu
660

<210> 226
<211> 653
<212> PRT
<213> Canine morbillivirus

<400> 226
Met His Asn Lys Ile Pro Lys Arg Ser Lys Thr Arg Thr His Gln Gln
1 5 10 15

Asp Leu Pro Gln Arg Ser Thr Lys Ser Ala Glu Val Arg Thr Phe Gln
20 25 30

Ala Arg His Ser Thr Thr Ser Ala Leu Arg Ser Thr His His Gly Arg
35 40 45

Ile Ser Asp Ile His His Ile Met Asn Arg Thr Arg Ser Cys Arg Gln
50 55 60

Ala Ser His Arg Ser Asp Asn Ile Pro Ala His Gly Asp His Glu Gly
65 70 75 80

Ile Ile His His Thr Pro Glu Ser Val Ser Gln Gly Ala Gly Pro Arg
85 90 95

Leu Lys Gly Gln Arg Tyr Asn Ala Thr Asn Ser Gly Ser Gln Cys Thr
100 105 110

Trp Leu Val Leu Trp Cys Ile Gly Ile Ala Gly Leu Phe Leu Cys Ser

115 120 125

Lys Ala Gln Ile His Trp Asn Asn Leu Ser Thr Ile Gly Ile Ile Gly
130 135 140

Thr Asp Ser Val His Tyr Lys Ile Met Thr Arg Pro Ser His Gln Tyr
145 150 155 160

Leu Val Ile Lys Leu Met Pro Asn Val Ser Ile Ile Asp Asn Cys Thr
165 170 175

Lys Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu Asn Ser Val Leu Glu
180 185 190

Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys Asn Val Lys Pro Leu
195 200 205

Gln Ser Val Gly Ser Gly Arg Arg Gln Arg Arg Phe Ala Gly Val Val
210 215 220

Ala Gly Ala Ala Leu Gly Val Ala Thr Ala Ala Gln Ile Thr Ala Gly
225 230 235 240

Ile Ala Leu His Gln Ser Ser Leu Asn Ala Gln Ala Ile Gln Ser Leu
245 250 255

Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala Ile Glu Glu Ile Arg Glu
260 265 270

Ala Thr Gln Glu Thr Val Ile Ala Val Gln Gly Val Gln Asp Tyr Val
275 280 285

Asn Asn Glu Leu Val Ala Met Gln His Met Ser Cys Glu Leu Gly Gln
290 295 300

Arg Leu Gly Leu Lys Leu Leu Arg Tyr Tyr Thr Glu Leu Leu Ser Ile
305 310 315 320

Phe Gly Pro Ser Leu Arg Asp Pro Ile Ser Ala Glu Ile Ser Ile Gln
325 330 335

Ala Leu Ser Tyr Ala Leu Gly Gly Glu Ile His Lys Ile Leu Glu Lys
340 345 350

Leu Gly Tyr Ser Gly Asn Asp Met Ile Ala Ile Leu Glu Ser Arg Gly
355 360 365

Ile Lys Thr Lys Ile Thr His Val Asp Leu Pro Gly Lys Leu Ile Ile
370 375 380

Leu Ser Ile Ser Tyr Pro Thr Leu Ser Glu Val Lys Gly Val Ile Val
385 390 395 400

His Arg Leu Glu Ala Val Ser Tyr Asn Ile Gly Ser Gln Trp Tyr Thr
405 410 415

Thr Val Pro Arg Tyr Val Ala Thr Asn Gly Tyr Leu Ile Ser Asn Phe
420 425 430

Asp Glu Ser Ser Cys Val Phe Val Ser Glu Ser Ala Ile Cys Ser Gln
435 440 445

Asn Ser Leu Tyr Pro Met Ser Pro Leu Leu Gln Gln Cys Ile Arg Gly
450 455 460

Asp Thr Ser Ser Cys Ala Arg Thr Leu Val Ser Gly Thr Met Gly Asn
465 470 475 480

Lys Phe Ile Leu Ser Lys Gly Asn Ile Val Ala Asn Cys Ala Ser Ile
485 490 495

Leu Cys Lys Cys Tyr Ser Thr Ser Thr Ile Ile Asn Gln Gly Pro Asp
500 505 510

Lys Leu Leu Thr Phe Ile Ala Ser Asp Thr Cys Pro Leu Val Glu Ile
515 520 525

Asp Gly Val Thr Ile Gln Val Gly Gly Arg Gln Tyr Pro Asp Met Val
530 535 540

Tyr Glu Ser Lys Val Ala Leu Gly Pro Ala Ile Ser Leu Glu Arg Leu
545 550 555 560

Asp Val Gly Thr Asn Leu Gly Asn Ala Leu Lys Lys Leu Asp Asp Ala
565 570 575

Lys Val Leu Ile Asp Ser Ser Asn Gln Ile Leu Glu Thr Val Arg Arg
580 585 590

Ser Ser Phe Asn Phe Gly Ser Leu Leu Ser Val Pro Ile Leu Ile Cys
595 600 605

Thr Ala Leu Ala Leu Leu Phe Leu Ile Tyr Cys Cys Lys Arg Arg Tyr
610 615 620

Gln Gln Thr Leu Lys Gln Ser Thr Lys Val Asp Pro Thr Phe Lys Pro
625 630 635 640

Asp Leu Thr Gly Thr Ser Lys Ser Tyr Val Arg Ser Leu
645 650

<210> 227
<211> 80
<212> PRT
<213> Canine morbillivirus

<400> 227
Lys Ser Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
1 5 10 15

Gly Gly Arg Gly Asp Ile Phe Pro Ser Tyr Arg Cys Ser Gly Ala Thr
20 25 30

Thr Ser Val Gly Arg Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
35 40 45

Leu Ile Ser Arg Thr Ser Glu Ile Ile Asn Met Leu Thr Ala Ile Ser
50 55 60

Asp Gly Val Tyr Gly Lys Thr Tyr Leu Leu Val Pro Asp Phe Leu Glu
65 70 75 80

<210> 228
<211> 80
<212> PRT
<213> Canine morbillivirus

<400> 228
Gly Ile Phe Gly Ala Thr Pro Met Asp Gln Val Glu Glu Val Ile Pro
1 5 10 15

Val Ala His Pro Ser Val Glu Lys Ile His Ile Ala Asn His Arg Gly
20 25 30

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Val Ser
35 40 45

Glu Lys Gln Glu Glu Gln Lys Asn Cys Leu Glu Ser Ala Cys Gln Arg
50 55 60

Lys Ser Tyr Pro Met Cys Asn Gln Thr Ser Trp Glu Pro Phe Gly Gly
65 70 75 80